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CLAIMS

(52)

1. Method of separating particles in a fluid medium having a density higher than that of the particles to be separated, whereby a mixture of the particles to be separated is fed to a separation chamber of a separation apparatus, and
5 streams enriched in a particular type of particles are discharged from the separation chamber, characterized in that the mixture of particles is subjected to a treatment comprising the step of moving the fluid medium up and down relative to the mixture of particles, whereby a barrier is present
10 above the particles for restraining the particles.

2. Method according to claim 1, characterized in that the particles to be separated are plastic particles.

3. Method according to claim 2, characterized in that the plastic particles to be separated are polyolefines.

15 *suba 17* 4. Method according to any of the preceding claims, characterized in that the fluid medium is an aqueous medium.

5. Method according to claim 4, characterized in that the aqueous medium is water.

20 *suba 27* 6. Method according to claim 4 or 5, characterized in that the aqueous medium has a temperature of about 0°C.

7. Method according to any of the preceding claims, characterized in that separate discharge-facilitating particles are present in the fluid medium.

8. Method according to claim 7, characterized in
25 that facilitating particles are bulky particles having a density between the densities of the streams enriched in particular particles.

suba 37 9. Method according to any of the preceding claims, characterized in that the barrier for restraining the particles is an element provided in the separation chamber.
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10. Method according to any of the preceding claims, characterized in that the element for restraining the particles comprises passages for the passage of the fluid medium.

11. Method according to any of the preceding claims,
35 characterized in that the element is provided at an angle

with the horizontal, preferably at an angle between 2 - 45°, more preferably between 5 - 30° such that the particles are transported away from the place of supply.

12. Apparatus suitable for separating particles having a density lower than that of a fluid medium, wherein the apparatus comprises

- a separation chamber having a supply opening for particles to be separated;
- discharge openings for separated fractions of particles;
- 10 - an element possessing passages provided above the supply opening, the element defining a first portion of the separation chamber and a second portion of the separation chamber;
- means for moving a fluid medium up and down relative to the
- 15 particles to be separated,

characterized in that the element is a particles restraining element, and supply opening and the discharge openings are in direct communication with each other via the first portion.

13. Apparatus according to claim 12, characterized in that the element is provided at an angle with the horizontal, preferably an angle between 2 - 45°, more preferable between 5 - 30.

14. Apparatus suitable for separating particles having a density lower than that of a fluid medium, wherein the apparatus comprises

- a separation chamber having a supply opening for particles to be separated;
- discharge openings for separated fractions of particles;
- an element possessing passages provided above the supply
- 30 opening, the element defining a first portion of the separation chamber and a second portion of the separation chamber;
- means for moving a fluid medium up and down relative to the particles to be separated,

35 characterized in that the element has a first section with first passages and a second section with second passages, the first passages being smaller than the second passages, the first section being a particles restraining element, a supply

opening and a first discharge opening being in direct communication with each other via the first portion, the supply opening and a second discharge opening being in communication with each other via the first portion, the second section and
5 the second portion.

15. Apparatus according to claim 14, characterized in that the element is provided at an angle with the horizontal, preferably an angle between 2 - 45°, more preferable between 5 - 30.

10 16. Apparatus suitable for separating particles having a density lower than that of a fluid medium the apparatus comprises

- a separation chamber having a supply opening for the particles to be separated;
- 15 - an element provided above the supply opening, said element comprising a multitude of openings allowing the passage of said particles; and
- means provided to move the fluid medium up and down relative to the particles to be separated,
- 20 characterized in that said supply opening extends in a substantially radial direction and second means are provided to rotate the element relative to fluid medium in the separation chamber.

17. Apparatus according to claim 16, characterized
25 in that it comprises means for locally disturbing a mass comprising added particles not capable of passing through the openings of said element and particular particles separated from particles which have passed through said openings of said element.

30 18. Method of separating particles in a fluid medium having a density higher than that of the particles to be separated, characterized in that an apparatus according to claim 14 is used, a mixture of particles to be separated is supplied below a layer of particles having a thickness which
35 doesn't allow them to pass through the openings of the element, the fluid medium in the separation chamber is rotated relative to the element, the element is moved up and down to move the fluid medium relative to the particles to be sepa-

rated, causing particles with lower density to pass through the facilitating particles and through the openings in said element to end up in fluid medium above said element from which the particles are discharged from the separation chamber, whereas the facilitating particles act as a barrier for and restrain the particles with higher density, which particles with higher density are discharged from the separation in the fluid medium below said element.

19. Method according to claim 18, characterized in that the fluid medium is rotated with respect to the wall of the separation chamber.

20. Method of separating particles in a fluid medium having a density higher than that of the particles to be separated, characterized in that an apparatus according to claim 16 is used, a mixture of particles to be separated is supplied below a layer of particles having a thickness which doesn't allow them to pass through the openings of the element, the fluid medium in the separation chamber is rotated relative to the element, the element is moved up and down to move the fluid medium relative to the particles to be separated, causing particles with lower density to pass through the facilitating particles and through the openings in said element to end up in a first section comprising fluid medium above said element from which first section the particles are discharged from the separation chamber, whereas the facilitating particles act as a barrier for and restrain the particles with higher density, the means for locally disturbing the mass of facilitating particles and restrained particles with higher density, allowing said particles with higher density to pass through the openings in said element to end up in a second section above the element separated from the first section and discharging a stream enriched in particles having a higher density from the separation chamber.